

CANADIAN PACIFIC RAILWAY COMPANY.

SPECIFICATION OF FIRST-CLASS PASSENGER CARS.

GENERAL CONDITIONS OF CONTRACT.

The Cars and Trucks are to be made exactly to the dimensions given in the specification, according to the drawings, and exactly similar and equal in all respects to the samples and models supplied. Each variety of timber used is to be of first quality of its kind, dry, sound, free from large knots, shakes, or any sign of decay, well and fully seasoned, and accurately fitted and joined together. The wrought iron is to be of "best Staffordshire," or of equal and approved quality; all welds and joints to be carefully made, the forgings to be sound, and neatly finished. The ordinary castings to be made from tough grey pig iron; they are to be sound, smooth, free from sand holes, blow holes or scoria, and perfect in shape, size and every other respect. All the bolts and nuts used are to be of full diameter, screwed to "Whitworth's" standard thread; all the threads to be clean and full, so that the nuts will not shake; all bolt holes to be fair, opposite and perfectly circular, the bolts to be a tight driving fit through all timber, and, wherever possible, bolt heads are to be on the outside and on the top of the material through which they pass.

The contractor is to find, provide, fix and perform, with the best materials of their several kinds, all and every part of the works herein specified or represented on the drawings, or that may not be indicated, but is generally implied and understood in the full equipment of Railway Passenger Cars and Trucks, and are to be fitted and finished in the most complete manner, to the entire satisfaction of the Mechanical Superintendent, or his appointed Agent or Inspector, all of whom shall be allowed to inspect the work during working hours, and shall have the power to reject the whole or any part found defective in quality of material or workmanship, or not in accordance with the specification, the drawings, and the samples and models supplied. And should there, by any oversight, be any error or discrepancy between the various drawings, models, samples and the specification, the Mechanical Superintendent is to decide what is the correct reading and original intention of the same, his decision to be final and binding on both parties of the contract.

All metal work, including the springs, axles and wheels, are to be warranted for twelve months after being set to work; any failure during that period—except such as results from accident—must be made good by the Contractor.

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MAIN OR UNDER FRAMING.

	MATERIAL.	No.	SIZE.
Length by breadth over frame.....			50' 0" x 9' 10"
Side Sills over tenons.....	White Oak or Yellow Pine..	2	8½" x 5" x 49' 3"
Intermediates, over tenons.....	do do ..	2	7½" x 4" x 49' 2"
Centrals, do do ..	do do ..	2	7½" x 4" x 49' 2"
Headstocks.....	White Oak.....	2	8½" x 7" x 5' 10"
Cross timbers, between centrals.....	Ash.....	21	7½" x 2" x 9"
do do do and intermediates.....	do	42	7½" x 2" x 1' 0½"
do do intermediates and side sills.....	do	34	7½" x 2" x 2' 8¾"
Furring between cross timbers on side sills.....	do	24	7½" x 2" x 1' 0½"
do do do do and wheel boxes.....	do	16	7½" x 2" x 3' 9"
do do do do	do	4	7½" x 1" x 4' 9"
Tie Rods [transverse] with nut at each end.....	Wrought Iron.....	11	{ 3" dia x 9' 10" long with ends ¾" dia x 4" long.
Joint bolts.....	do do	8	¾" dia x 1' 2" long.
Corner brackets.....	Cast Iron.....	4	See Drawing.
Bolts for same to side sills, heads checked in outside....	Wrought Iron.....	8	¾" dia x 6½" long.
do do to headstocks, do do do .. do do	do	8	¾" dia x 8½" long.

Side sills to be dove-tailed into headstocks ½" on inside edge, and to have double tenons 2" long, by 3" wide, flush with inside face, as follows:—Commencing at top with 1½" shoulder, 1½" tenon, 2" space, 1½" tenon and 1½" shoulder, and to have inside corner casting bolted to headstock by two ¾" bolts, and to side sill by two ¾" bolts. Side sills and headstocks between sills to be rebated ⅞" x ⅞" on top inside edge for under flooring.

Centre and intermediate timbers to be framed to headstock with double tenons 2" long the full width of timbers, as follows:—Commencing at top, ⅞" shoulder, 1½" tenon, 2" space, 1½" tenon and 1½" shoulder; headstocks to be secured to intermediates and centrals by one joint bolt ¾" diam. to each timber.

Cross timbers to be placed as shown in drawing, and to be framed into centrals, intermediates and side sills with double tenons ¾" long, as follows:—Commencing at top, 1¼" shoulder, 1½" tenon, 2½" space, 1½" tenon and 1¼" shoulder.

Tie rods to run along side of cross timbers, and have nuts sunk in side sills, as shown in drawing.

Furring between cross timbers to be nailed to side sills with 4" cut nails; furring for wheel boxes to be placed 1' 2" from outside of intermediates; outside corners of headstock to be bevelled for corner posts as specified.

Side sills, intermediates and centrals to be checked ¾" for body bolster.

TRANSOMS.

	MATERIAL.	No.	SIZE.
Transoms.....	White Oak.....	2	7½" x 4" x 9' 10"
" truss rods, with nuts at each end.....	Wrought Iron.....	4	½" dia x 10' 1½" long
Bolts to side sills.....	" "	8	½" dia x 1' 0¾" "
" " intermediates and centrals.....	" "	8	½" dia x 11½" "
Washer plates.....	" "	4	3½" x 7½" x ⅝"
" " for transom ends.....	Cast Iron.....	4	3" x 7½" x ⅝"
Brackets for truss rods.....	" "	4	See Drawing
" secured by coach screws.....	Wrought Iron.....	16	¾" dia x 2" long.

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Transoms, centre to centre, to be 10' 10".

Transoms to be checked 1" for side sills, intermediates and centrals, and secured to side sills by two $\frac{5}{8}$ " bolts to each timber, and to intermediates and centrals by one $\frac{5}{8}$ " bolt to each timber. Bolts to side sills to have wrought iron washer plate checked in transom, flush with lower face, which also forms bearing for extension strut on longitudinal truss rods. Each transom is strengthened by two wrought iron bent truss rods $\frac{3}{4}$ " diam. In course of these rods from centre to side of car they pass under cast iron brackets 4" long, secured to under side of transom by four $\frac{5}{8}$ " coach screws, and then incline upwards, passing through transom to end, and are provided with cast iron washer plates covering the transom end, and having a lip on inside and round corner on outside at bottom edge and sides only; lip to be checked into transom, also having two holes cast through for passage of rods, and raised inclined faces round the holes, to give square bearing face for truss nuts. Bottom edge of casting to be flush with lower face of transom. See drawing.

BODY BOLSTER

	MATERIAL.	No.	SIZE.
Top plates.....	Wrought Iron.....	2	1 0" x $\frac{3}{4}$ " x 9' 10"
Bottom plates.....	" ".....	2	1 0" x $\frac{3}{4}$ " x 9' 2 $\frac{1}{2}$ "
Bolts for same (with double nuts).....	" ".....	12	$\frac{3}{4}$ " dia. x 3 $\frac{1}{4}$ " long.
Friction plates.....	Cast Iron.....	4	See Drawing.
Pillars (long).....	" ".....	8	" "
" (short).....	" ".....	8	" "
Bolts for same (with double nuts).....	Wrought Iron.....	8	$\frac{5}{8}$ " dia. x 6 $\frac{3}{8}$ " long.
" " " " " ".....	" ".....	8	$\frac{5}{8}$ " dia. x 5 $\frac{1}{2}$ " "
Top crown plate.....	Cast ".....	2	See Drawing.
Bolts for bolster to side sills (with double nuts).....	Wrought ".....	12	$\frac{3}{4}$ " dia. x 1 0" long.
" " " to intermediates (with double nuts).....	" ".....	8	$\frac{3}{4}$ " dia. x 1 $\frac{1}{2}$ " "
" " " to centrals, crown plates and draw timbers (single nuts).....	" ".....	8	$\frac{3}{4}$ " dia. x 1 2 $\frac{1}{2}$ " "

Centre of body bolster 6' 10 $\frac{1}{2}$ " from outside of headstock.

Top plate of body bolster to have lugs welded on under side of ends 4" long, full width of plate, to form shoulder for lower plate.

Bottom plate to be 9' 2" long, when bent, and to be set down 4 $\frac{1}{2}$ " in centre for a distance of 1' 6 $\frac{1}{2}$ " to take distance casting for draw timbers, also to be set to fit against top plate 2 $\frac{1}{2}$ " from shoulder at each end, and to be bolted to top plate by three $\frac{3}{4}$ " bolts at each end. See drawing.

Bolster to be bolted to side sills with three $\frac{3}{4}$ " bolts at each end and to intermediates and centrals by two $\frac{3}{4}$ " bolts to each timber; also to have 2" hole through centre of both plates for king-pin.

TRUSS RODS.

	MATERIAL.	No.	SIZE.
Truss rods, [longitudinal] with turnbuckles.....	Wrought Iron.....	2	1 $\frac{1}{2}$ " dia. x 39' 0" [before bending]
Bolts for same to side sill.....	" ".....	8	$\frac{3}{4}$ " dia. x 10 $\frac{1}{4}$ " long.
Extension struts, with nuts.....	" ".....	4	1 $\frac{1}{2}$ " dia. x 11 $\frac{1}{4}$ " "
Stays for same.....	" ".....	4	$\frac{3}{4}$ " dia.
" secured by coach screws.....	" ".....	8	$\frac{1}{2}$ " dia. x 2 $\frac{1}{2}$ " long.

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Two wrought iron bent truss rods $1\frac{1}{2}$ " diam., each in two pieces with screwed ends $1\frac{1}{2}$ " diam. by 1' 4" long, are placed under side sills $2\frac{1}{2}$ " from outside. The ends of each half of truss at centre of ear to be connected by a double-headed nut or turnbuckle of cast steel $8\frac{1}{2}$ " long, with hexagonal centre $2\frac{3}{4}$ " across flats, and at alternate ends screwed with right and left hand thread; turnbuckle to be secured by lock-nut on each rod. In the course of rods from the centre towards end of ear they pass under wrought iron extension struts set on washer plates on under side of transoms, then under bolster ends with foot 3" wide by 1" thick, and secured to bolster by same bolts which secure bolster to side sill, and are then set up to bottom of sill 3" wide by $\frac{3}{4}$ " thick, for a distance of $9\frac{1}{4}$ " with square shoulder for bolster, to be secured to sill by two bolts $\frac{3}{4}$ " diam., and have end turned up $\frac{3}{4}$ ", and checked into sill, as shown in drawing. Distance from under side of sill to centre of truss rod 1' 0 $\frac{3}{4}$ ".

Wrought iron extension struts to be $1\frac{1}{2}$ " diam., screwed at least 4" at one end, with nut, and other end to have foot for truss rod, as shown in drawing. Stay for extension strut to be $\frac{3}{4}$ " diam., with round eye at one end for strut to pass through, and other end to have foot secured to transom by two $\frac{1}{2}$ " coach screws, as shown in drawing.

	MATERIAL.	No.	SIZE.
Eye brackets for truck check chains.....	Wrought Iron.....	8	See Drawing.
Bolts for same to side sills.....	" "	16	$\frac{1}{2}$ " dia x 10" long.
Truck centre pins.....	" "	2	$1\frac{1}{2}$ " dia x 2' 3" long.
Plates.....	Brass.....	2	6" dia x $\frac{1}{2}$ " thick.
Screws for same.....	"	8	No. 18 x $1\frac{1}{4}$ " long.

Eye brackets for truck check chains to be placed longitudinally, and secured to under side of side sills at 1' 5" from end of frame to centre of first eye, and 10' 11" from centre to centre of eyes.

Truck centre pins to be made of wrought iron $1\frac{1}{2}$ " diam., with good solid heads. Heads to be partially sunk in floor, and covered by a round brass plate 6" diam. by $\frac{1}{4}$ " thick; or inscription plate of maker, to be sunk flush with top of floor and secured by four No. 18 brass screws $1\frac{1}{2}$ " long.

UPPER OR BODY FRAMING.

	MATERIAL.	No.	SIZE.
Top of sill to top of wall plate.....			6' 11 $\frac{1}{2}$ "
Window openings, on each side.....		16	2' 0 $\frac{1}{4}$ "
Corner posts.....	White Ash.....	4	$5\frac{1}{2}$ " x $5\frac{1}{2}$ " x 7' 6"
Screws for same (to headstock).....	Wrought Iron.....	2	No. 24 x $3\frac{1}{2}$ " long.
Screws for same (for side and end posts).....	" "	48	No. 20 x $2\frac{1}{2}$ " long.
Door posts.....	White Ash.....	4	$5\frac{1}{2}$ " x $5\frac{1}{2}$ " x 7' 0 $\frac{1}{4}$ "
Screws for same (for end posts).....	Wrought Iron.....	24	No. 20 x $2\frac{1}{2}$ " long.
Window posts.....	White Ash.....	64	
Side ".....	" "	8	$5\frac{1}{2}$ " x $1\frac{1}{4}$ " x 7' 0 $\frac{1}{4}$ "
End ".....	" "	20	
Stud posts below windows.....	" "	32	$5\frac{1}{2}$ " x $1\frac{1}{4}$ " x 2' 4 $\frac{1}{2}$ "
Wall plates (not to be spliced).....	Pitch or Red Pine.....	2	$6\frac{1}{2}$ " x 2" x 49' 7"
Tie rods through wall plates and side sills, with $\frac{5}{8}$ " nut at each end.....	Wrought Iron.....	38	$\frac{1}{2}$ " dia x 7' 0 $\frac{1}{4}$ " long with ends $\frac{5}{8}$ " dia x 4" long.

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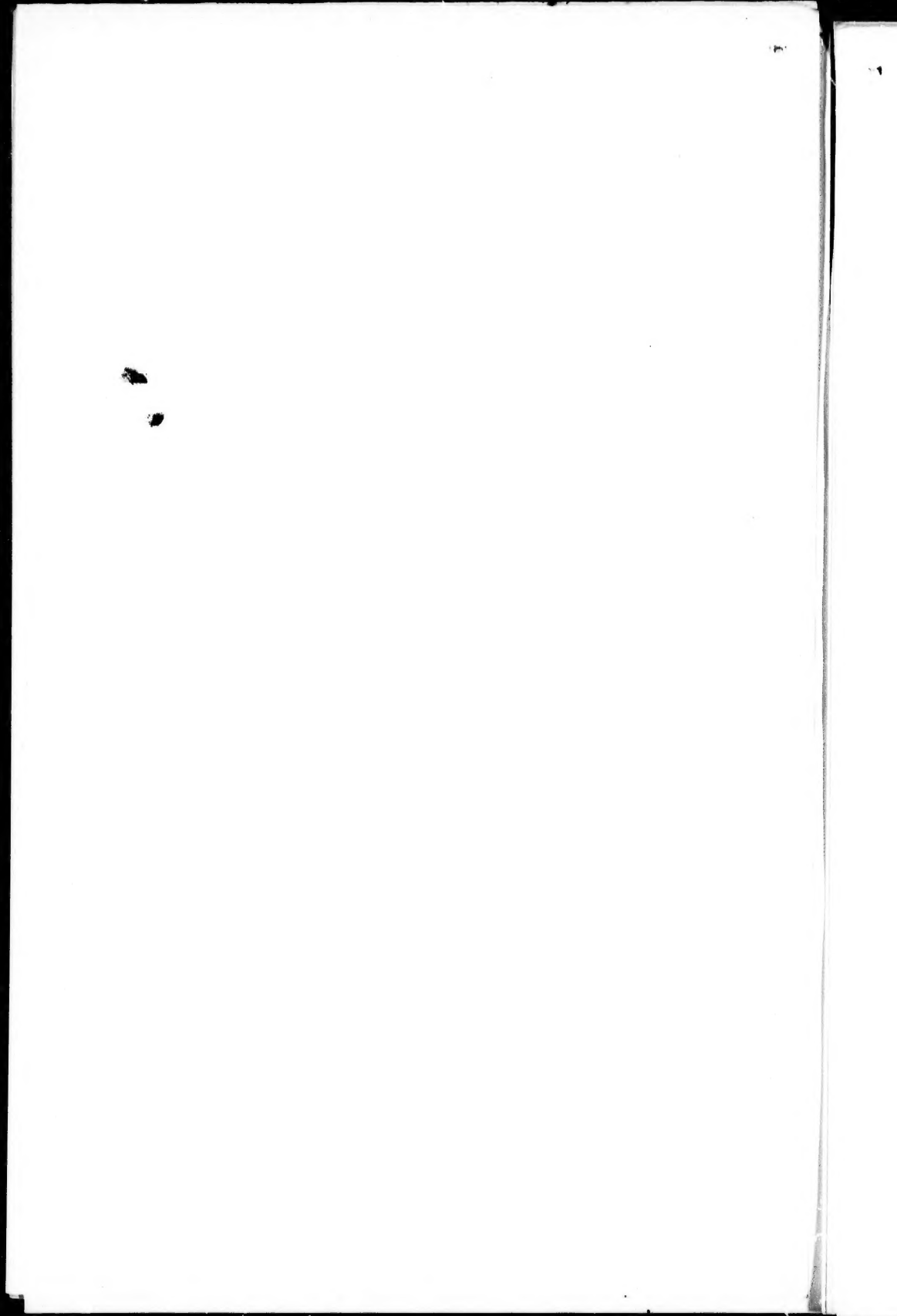
UPPER OR BODY
FRAMING.

	MATERIAL.	No.	SIZE.
Belt rails (side).....	Oak or White Ash.....	2	5" x 1 1/4" x 49 2 1/4"
" " (end).....	" " ".....	4	5" x 1 1/4" x 2 1 1/4"
Screws for belt rail.....	Wrought Iron.....	248	No. 18 x 2" long.
" " " splice to post.....	" " ".....	16	No. 20 x 2 1/4" long.
Panel rails.....	Oak or White Ash.....		3" x 1 1/4" See drawing
Screws for same.....	Wrought Iron.....	106	No. 16 x 1 1/2" long.
Truss arch centre pieces, outer arch.....	Oak or White Ash.....	2	5" x 1 1/4" x 10 9 1/4"
" " diagonals, outer arch.....	" " ".....	4	5" x 1 1/4" x 12 10 1/4"
" " end diagonals, outer arch.....	" " ".....	4	5" x 1 1/4" x 5 8 1/4"
Furring pieces between first and second side posts.....	White Ash.....	4	3 1/2" x 1 1/4" x 16 1/2"
Truss arch, centre pieces, inner arch.....	Oak or White Ash.....	2	5" x 1 1/4" x 1 1/4"
" " diagonals, " ".....	" " ".....	4	5" x 1 1/4" x 5 2 1/4"
Screws for same to posts.....	Wrought Iron.....	248	No. 18 x 2" long.
" " " to strut for truss bar.....	" " ".....	16	No. 20 x 3" long.
Window panel furring.....	White Ash.....	136	5 1/2" x 1 1/4" x 6"
" " ".....	" " ".....	16	5 1/2" x 1 1/4" x 11 1/2"
" " ".....	" " ".....	32	5 1/2" x 1 1/4" x 1 6 1/4"
" " ".....	" " ".....	32	5 1/2" x 1 1/4" x 4 1/4"
Arch rails.....	Oak or White Ash.....	2	1 3" x 4" x 10' 1 1/4"
<i>Joint roll</i> " " " for same to wall plate.....	Wrought Iron.....	4	1" dia x 8" long.
Tie rods through headstocks and arch rail, with nuts checked in arch rail.....	" " ".....	4	1" dia x 8 2 1/4" long with ends 1" dia x 4" long.
End diagonal braces.....	Oak or White Ash.....	4	4" x 1 1/4" x 7 10"
Screws for same to posts.....	Wrought Iron.....	24	No. 18 x 2" long.
" " " to arch rail.....	" " ".....	16	No. 20 x 2 1/4" long.
Truss bars, with two turnbuckles to each.....	" " ".....	2	2 1/2" x 1/2" section with round ends, 1" dia.
Struts for same.....	Oak.....	4	10" x 3 1/2" x 1 11 1/2"
Shoes for struts.....	Cast Iron.....	4	See drawing.
Shoes for nuts, under sill.....	" " ".....	4	" " "
Screws to secure bar to window posts.....	Wrought Iron.....	26	No. 18 x 1 1/2" long.
Truss planks, 16" deep, finished.....	Red Pine.....	2	3" x 11 1/2" x 49 1 1/4"
Bolts for same, heads 1 1/4" square, checked in.....	Wrought Iron.....	26	1" dia x 1 7 1/2" long.
Catch screws for same to posts.....	" " ".....	144	1/2" dia x 4" long.
Strips.....	Rubber.....	2	1" x 3 1/2" x full length of car.
".....	" " ".....	4	1" x 3/8" x 3 1/2" long.

Car to have sixteen (16) windows on each side, 2' 0 1/4" opening.

Headstocks to have outside corner bevelled for corner post at an angle of 45° for 4 3/8" each way, and corner post to be checked full depth of headstock at 45° to form shoulder on headstock, leaving 3/4" projection on each side, so as to be flush with side and end panels, as shown in drawing, to be secured to headstock by five No. 20 screws, 3 1/2" long, to each post. Corner post to be 6' 9 1/2" long over shoulders, and to have square shoulder under wall plate; also, to be checked 3/4" on outside face for sides of platform roof.

One side post and one end post to be secured to each corner post with six No. 20 screws, 2 1/4" long, to each post, and each to be chamfered on inside corner to fit the other, and to be morticed on one side only for furring between posts.



Door posts to be 6' 0 $\frac{1}{2}$ " long over shoulders, and to be framed into headstocks and arch rails with single tenon, 1 $\frac{1}{2}$ " \times 3 $\frac{1}{2}$ ", and 1 $\frac{1}{2}$ " long, as follows:—Commencing at end face with 2 $\frac{1}{2}$ " shoulder, 1 $\frac{1}{2}$ " tenon, and 1 $\frac{1}{2}$ " shoulder, and commencing at inside face with 2 $\frac{1}{2}$ " shoulder and 3 $\frac{1}{2}$ " tenon, and leaving flush face. One end post to be secured to each door post with six No. 20 screws, 2 $\frac{1}{2}$ " long, and to be morticed on one side only for furring between posts.

Window, side and end posts to be placed as shown in drawing, to be 6' 0 $\frac{1}{2}$ " long over shoulders, and to be framed into side sills and headstocks with single tenon 1 $\frac{1}{2}$ " long, full width of post, commencing at outside with 1 $\frac{1}{2}$ " shoulder, 1 $\frac{1}{2}$ " tenon, and 2 $\frac{1}{2}$ " shoulder, and same into wall plates with single tenon 1 $\frac{1}{2}$ " long; all to be checked $\frac{7}{8}$ " for belt rail, except those under splice, which are checked 1 $\frac{1}{2}$ ", and all to be checked $\frac{7}{8}$ " for panel rail; window and side posts to be checked $\frac{1}{2}$ " for truss plank and flooring. Fifty-two (52) window posts to be checked 2 $\frac{1}{2}$ " \times $\frac{1}{2}$ " on inside for flat truss rod, as shown in drawings.

Window posts to be morticed on one side only, alternately, for furring between posts; side and end posts to be morticed on both sides, except where otherwise specified.

Window and side posts to be checked $\frac{7}{8}$ " for truss arch timbers where required.

Window posts to be grooved for sash beads, as shown in drawing. Stud posts under windows to be tenoned into side sill same as window posts, to have square bearing on furring below window sill, and to be checked for belt rail, panel rail, flat truss rod, and truss arch timbers same as window posts, but to be checked 1" for truss plank.

Tie rods through side sills and wall plates to be placed as shown in drawing, and to be 1 $\frac{1}{2}$ " from side of window post wherever possible.

Outside belt rail to have top bevelled for window sill, with bevel checked for post, to be placed as shown in drawing, and, except where spliced, to be checked $\frac{7}{8}$ " on inside for window, side and end posts, and stud posts below windows, and to be secured to each by two No. 18 screws 2" long; splice to be half lapped, each lap to be $\frac{3}{4}$ " thick by 10 $\frac{1}{2}$ " long, full depth of timber, to cover two window posts, leaving $\frac{1}{2}$ " check on inside of rail for posts, which are checked 1 $\frac{1}{2}$ " to suit as specified, and to be backed between posts with furring 5" deep by 1 $\frac{1}{2}$ " thick, well glued to belt rail and nailed to posts; splice to be secured to each post by two No. 20 screws 2 $\frac{1}{2}$ " long, and to furring by four No. 18 screws 2" long. Not more than two splices allowed in each side belt rail. Panel rail to be placed as shown in drawing, and mitred on truss arch timbers, to be checked $\frac{3}{4}$ " on inside for window, side and end posts, and secured to same by two No. 16 screws 1 $\frac{3}{4}$ " long to each post, except where rail is mitred, when one screw is sufficient; mitred ends to be well glued and nailed to truss arch timbers.

Wall plates to be rebated on outside bottom edge $\frac{3}{4}$ " \times $\frac{3}{4}$ " to cover sheeting; also to be checked on top for rafters, where required, $\frac{3}{4}$ " deep by 2" from inside edge, full width of rafter, also to be tenoned into arch rails with double tenons 1 $\frac{1}{2}$ " long by 1 $\frac{1}{2}$ " deep, and flush with top face of wall plate; commencing at outside with 1 $\frac{1}{2}$ " shoulder, 1" tenon, 1 $\frac{1}{2}$ " space, 1" tenon and 1 $\frac{3}{4}$ " shoulder, and to be secured by one $\frac{1}{2}$ " joint bolt 9 $\frac{1}{2}$ " long to each timber, as shown in drawing.

TRUSS ARCH.—Centre timber of outer arch to be placed against under side of belt rail, to cover four window spaces in centre of ear, and lap on half of window post; diagonal timbers to butt against each end of centre timbers, run down to sill over centre of bolster, and to be secured to truss rod strut by two No. 20 screws 3" long; end diagonals to butt against these, to be secured in same manner, and to run up to under side of belt rail and butt against second side post from ends of ear; second post to be blocked with a piece of 3 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " furring under belt rail between first and second posts; furring to be well glued and nailed in place; all to be as shown in drawing.

Inner truss arch to have centre block covering space between centre windows, lapping on half of each post, and placed against under side of centre timber in outer arch; diagonals to butt against ends of centre block, run down to side sills, and butt against window post over centre of transom, also to be gained into side sill; all to be as shown in drawing.

Truss arch timbers to be checked $\frac{7}{8}$ " where required for window posts and stud posts under windows, which are also checked $\frac{7}{8}$ " as specified, and to be secured to each post by two No. 18 screws 2" long; joints on posts to have two screws to each piece.

Window panel furring to be tenoned into window, side and end posts with single tenon $\frac{1}{2}$ " long, full thickness of furring as follows:—Commencing at outside with 1 $\frac{1}{2}$ " shoulder, 1 $\frac{1}{2}$ " tenon, and 1 $\frac{1}{2}$ " shoulder.

Arch rails to be checked for turret sills and door head as shown in drawing, also to be morticed for wall plate, as specified; and to be secured to headstock by two $\frac{3}{4}$ " tie rods outside door posts, and two $\frac{1}{2}$ " rods with $\frac{3}{4}$ " ends inside corner posts, with nuts checked in arch rail and placed as in drawing.

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Diagonal braces in end to have bearing at bottom on head stock and against end post screwed on corner post, and at top to be checked $\frac{3}{8}$ " to form shoulder against arch rail and end post screwed to door post; end posts to be checked down to face of arch rail for brace, leaving brace flush with post, and brace to be lapped on arch rail 6" and screwed to same by four No. 20 screws $2\frac{1}{2}$ " long. Brace to be checked for other posts $\frac{7}{8}$ ", which are also checked $\frac{7}{8}$ " for brace, and to be secured to each post by two No. 18 screws 2" long.

Two wrought iron truss rods $2\frac{1}{2}$ " \times $\frac{1}{4}$ " section with round ends 1" diam., flat portion to be checked into window posts on inside to full depth $\frac{1}{2}$ ", at 2' $0\frac{7}{8}$ " from side sill to bottom edge, and to have struts resting on side sills over body bolsters as shown; struts to be 8" wide on bottom and 5" wide on top, with end face vertical, as shown; to be $3\frac{3}{8}$ " thick, fitting between truss arch and inside panelling, and checked 1" for truss plank, to be placed with foot against window post, and filled in with a piece of furring against stud post to prevent moving; furring to be glued and nailed in place; struts to have cast iron shoes on top, with groove for edge of truss bar and nap to hold shoe on strut, as shown. Bar to be checked in window posts about $\frac{3}{4}$ " towards end, to allow room for lip on shoe against inside panelling; flat bar to be about 38' $5\frac{1}{2}$ " long and having about 7" at each end set down to angle of round bar ends, which are about 6' 0" long, with turnbuckle 6" long, to allow end to be taken out; ends to pass through side sills $8\frac{3}{4}$ " from end of car on under side, as shown in drawing, and to be provided with nuts and cast iron shoes with inclined faces to give square bearing face for nuts, and having lip on upper face checked into side sills. Bars to be secured to alternate window posts by one No. 18 screw $1\frac{1}{2}$ " long.

Truss planks to have 1" camber from bolsters to centre of car, and to have $\frac{1}{2}$ " rise from bolsters to ends of planks, to be checked $\frac{1}{2}$ " for window and side posts, which are also checked $\frac{1}{2}$ " as specified, but not checked for stud posts; also to be grooved $\frac{1}{4}$ " deep by 1" wide in centre of under side for rubber strips full length of car. Each plank to be bolted down to flooring by thirteen $\frac{3}{8}$ " bolts, with heads checked in top of plank and passing through truss plank, flooring and side sill. Care to be taken to keep rubber in position, also to draw plank well down to floor and against posts, to which it is secured by two $\frac{3}{4}$ " coach screws 4" long with countersunk heads to each post, all to be as shown in drawing. Strips of rubber 3' 2" long to be returned across ends of car and nailed on under edge of sheeting. Sheeting to be kept well down to floor to keep rubber tight.

ROOF FRAMING.

	MATERIAL.	No.	SIZE.
Top of wall plate to top of turret car line.....		2	2' $10\frac{7}{8}$ "
Window openings, on each side.....		16	2' $3\frac{1}{2}$ " opening.
Turret sills, not to be spliced.....	Yellow Pine.....	2	4" \times $2\frac{1}{2}$ " \times 50' 6"
Turret wall plates, not to be spliced.....	" ".....	2	$3\frac{1}{4}$ " \times $2\frac{1}{2}$ " \times 50' 6"
Bolts for same, heads checked in sill.....	Wrought Iron.....	18	$\frac{1}{2}$ " dia \times 1' 6" long.
Posts, (panel).....	Ash or Yellow Pine.....	36	$2\frac{1}{2}$ " \times $2\frac{1}{2}$ " \times 1' $2\frac{1}{2}$ " long
" (intermediate).....	" " ".....	16	$3\frac{1}{4}$ " \times $2\frac{1}{2}$ " \times 1' $2\frac{1}{2}$ " "
Rafters (main roof).....	White Ash.....	102	$1\frac{1}{2}$ " thick See drawing
Joint bolts for same to turret sills, with round screw head.....	Wrought Iron.....	54	$\frac{1}{2}$ " dia \times 5" long (overhead).
Screws for same to wall plate.....	" ".....	102	No. 20 \times $4\frac{1}{2}$ " long.
" " " ".....	" ".....	102	No. 18 \times 3" "
Turret car lines.....	White Ash.....	55	$2\frac{1}{2}$ " \times $1\frac{1}{2}$ " \times 5' 6"
Screws for same to turret wall plate.....	Wrought Iron.....	110	No. 20 \times 3" long.
Carlines.....	" ".....	9	2" \times $\frac{5}{8}$ " See drawing.
Bolts for same.....	" ".....	18	$\frac{1}{2}$ " dia \times 5" long.
Bolts for same.....	" ".....	81	$\frac{3}{8}$ " dia \times $4\frac{3}{8}$ " long
Eye bolts for same to wall plates.....	" ".....	36	$\frac{3}{4}$ " dia \times 5" long.

FLOOR.

Roof shape to be "Arch deck and Turret."

Arch rails to be checked for turret sills, which are placed $10\frac{3}{4}$ " above wall plate, and 4' $10\frac{3}{4}$ " apart, as shown in drawing.

Posts to be $11\frac{1}{2}$ " over shoulders, and framed into sills and plates with single tenon $1\frac{1}{2}$ " long, full width of each post, as follows:—Commencing at outside with $\frac{3}{4}$ " shoulder, $\frac{3}{4}$ " tenon and $\frac{3}{4}$ " shoulder.

Sill and plate to be bolted together by one $\frac{1}{2}$ " bolt between each pair of panel posts, having head checked in sill and nut on top of plate. Intermediate posts to have tenons pegged in sill and plate.

Rafters to be checked into wall plates $\frac{3}{8}$ " deep by 2" from inside edge, as specified, and secured by one No. 20 screw $4\frac{1}{2}$ " long and one No. 18 screw 3" long, and to be tenoned into turret sills with single tenon $\frac{7}{8}$ " long, full width of rafter, as follows:—Commencing at bottom flush with bottom of turret sill with $1\frac{1}{4}$ " shoulder and 1" tenon, leaving flush face on top of rafter.

Rafters to be secured to turret sills by one $\frac{3}{4}$ " joint bolt 5" long over head, nut to be checked in top of rafter, and round screw head checked in turret sills. For rafters bolted to iron carlines, a joint bolt is used in one rafter only, on opposite side to turret bolt.

Turret carlines to be 12' $6\frac{1}{2}$ " radius outside, to be checked for turret wall plate, as shown, and secured to same at each end by one No. 20 screw 3" long.

Iron carlines to be 2" \times $\frac{5}{8}$ " section, as shown in drawing, with rafter bolted on each side by two $\frac{3}{8}$ " bolts $4\frac{3}{8}$ " long, and one $\frac{1}{2}$ " bolt 5" long, which also takes eye bolts for securing iron carline to wall plate; two $\frac{3}{8}$ " eye bolts required for each end of iron carline. One turret carline to be placed on each side of iron carline, and secured to same by five $\frac{3}{8}$ " bolts $4\frac{3}{8}$ " long.

Course of iron carline from centre of car passes over turret wall plate and down post, which is grooved $\frac{1}{4}$ ", to outside of turret sill, and follow rafter down to wall plate.

Platform roof to be as shown in drawing.

FLOORING.

Under-flooring to be of first quality, clear white pine, laid crossways of car, all pieces to be full length, 9' $1\frac{1}{4}$ " \times $\frac{7}{8}$ " thick, not more than 6" wide, and to be fitted in $\frac{7}{8}$ " rebate on side sills and headstocks, to be grooved and tongued, and to be nailed down with $2\frac{1}{2}$ " cut nails, two in each frame timber.

Upper-flooring to be of first quality, clear pitch or yellow pine, free from sap wood, to be 1" thick and not more than 3" wide, tongued and grooved $\frac{1}{16}$ " from face, with $\frac{1}{4}$ " \times $\frac{3}{8}$ " tongue, and laid lengthways of car; to be checked $\frac{1}{2}$ " for window posts, which are also checked $\frac{1}{2}$ " for flooring, so as to give full bearing for truss plank. Floor to be blind-nailed with 3" floor nails, one to each cross timber, none of the pieces to be less than 12' 0" long, and all joints to be made on cross timbers, with two nails to each end. Floor to be planed down smooth, and scraped. Flooring in doorways to be stopped flush with outside of headstock and protected with cast iron door sill plate in two parts, as shown in drawing, outer part to be secured to floor by ten No. 18 screws 2" long and having flange checked indoor post $\frac{1}{8}$ ", inner part to be secured to floor by nine No. 18 screws 2" long.

A thickness of building paper to be laid between the two floors and also below under flooring, with all joints made on intermediates and centrals.

Deafening floor to be of first quality, clear white pine, $\frac{7}{8}$ " thick, and not more than 6" wide, tongued and grooved, and laid crossways of car, to lap on side sills and headstocks $2\frac{1}{2}$ ", and to be secured to side sills, intermediates and centrals by $2\frac{1}{2}$ " barb nails, three in each timber, a $\frac{3}{4}$ " cove moulding to be placed all round to make a finish for flooring. A thickness of building paper to be placed inside of deafening floor, and all joints of paper to be made on intermediates or centrals.

Deafening floor in wheel boxes to be placed 3" above bottom of sill for clearance of wheels, and to be nailed to furring placed on side of boxes.

Space between under flooring and deafening floor to be packed with shavings.

PLATFORM.

	MATERIAL.	No.	SIZE.
Platform side sills.....	White Oak.....	4	6" x 2" x 2' 10"
" intermediates.....	" ".....	4	1' 0" x 4" x 9' 1½"
Bolts for same to prevent splitting.....	Wrought Iron.....	4	½" dia x 1' 0½" long.
" " " " ".....	" " " " ".....	4	½" dia x 9½" "
" " to main intermediate.....	" " " " ".....	12	½" dia x 1' 2½" "
" " to headstocks.....	" " " " ".....	4	¾" dia x 1' 3½" "
Draw bar timbers.....	White Oak.....	1	1' 0" x 4" x 9' 0½"
Bolts for same to prevent splitting.....	Wrought Iron.....	4	½" dia x 1' 0½" long.
" " " " " ".....	" " " " " ".....	2	½" dia x 11½" "
" " " " " and secure stop brace.....	" " " " " ".....	2	¾" dia x 1' 0½" "
" " to centrals.....	" " " " " ".....	4	½" dia x 1' 2½" "
" " " and secure guides for draw } bar springs, with double nuts.....	" " " " " ".....	8	¾" dia x 1' 4½" "
Bolts for same to headstocks.....	" " " " " ".....	4	¾" dia x 1' 2½" "
Platform heads.....	White Oak.....	2	8" x 7" x 8' 6" "✓
Tie rods for same, with nut and hook.....	Wrought Iron.....	4	¾" dia x 11' 4" fore bending, be-✓
Bevel washers for same.....	Cast Iron.....	4	¾" dia See drawing.
Platform truss beams.....	White Oak.....	2	11" x 6" x 1' 11½"
Bolts for same, to take stirrup block.....	Wrought Iron.....	2	½" dia x 1' 7½" long. "✓
Truss rods for same, with nut and hook.....	" " " " " ".....	4	¾" dia x 10' 0" fore bending, be-✓
Washer plates for these rods.....	" " " " " ".....	4	2½" x 2½" x ½"
Buffer spring beam.....	White Oak.....	2	8½" x 6" x 9"
Bolts for same.....	Wrought Iron.....	4	½" dia x 1' 4½" long.
Suspender beams.....	Red Pine.....	2	5" x 5" x 9½"
Stirrup blocks.....	White Oak.....	2	6" x 3" x 1' 1½"
Bolts for same to draw bar timber.....	Wrought Iron.....	6	½" dia x 7½" long.
Platform floor, as specified.....	Yellow Pine.....	2	2' 6" x 4' 11½"

Position of right and left hand sides of ear end to be taken by facing end of ear from outside. Platform sills to be 4'-9½" outside to outside, to be 2" thick by 5" deep at front end, and 6" deep at back end, to be 2'-6" over shoulders and to have ½" rise on top from headstock to platform head; to be tenoned into headstock 2½" clear from top, with single tenon 2" long, full width of timber, as follows:—Commencing at top with 1" shoulder, 2" tenon, and 3" shoulder, and to be tenoned into platform head, 1" clear of top, with single tenon 2" long full width of timber, as follows:—Commencing at top with 1" shoulder, 2" tenon, and 2" shoulder.

Platform intermediates to be 6" deep by 4" wide under intermediates of main frame, and 6'-1½" long from shoulder on headstock to end against bolster; to have 6" shoulder against headstock, and to be 2'-6" over shoulders, with ½" rise on top from headstock to platform head; to be tenoned into platform head 1" clear of top, with single tenon 3" long, and lip under 3", full width of timber, as follows:—Commencing at top with 2" shoulder, 2" tenon, 2" space, and 3" lip; lip to have rounded corner as shown, timber to be 12" deep to 6" from face of headstock and taper up to 9" deep against platform head, as shown in drawing; to have two ½" bolts in each timber, with heads checked in top to prevent splitting, placed as in drawing; each timber to be secured to intermediates of main frame by three ½" bolts, and to headstock by one ¾" bolt, with heads on top.

Draw bar timbers to be 6" deep by 4" wide, placed under centrals, to be 6'-3½" long from shoulder on headstock to end, which is cut to fit shoe on distance casting for iron bolster, shoe projecting 6½" from centre of bolster. Timbers to have 6" shoulder against outside of headstock and to be 2'-6" long over shoulders, with ½" rise on top from headstock to platform head; to be

tenoned into platform head 1" clear of top, with single tenon 3" long, full width of timber, as follows:—Commencing at top with 2" shoulder, 2" tenon, and 2" shoulder, to be then checked back $9\frac{1}{2}$ " for platform truss beam, shoulder of cheek to be chamfered to 5" deep, as shown on drawing. Timbers to be morticed on inside for platform truss beam, and checked $\frac{3}{4}$ " for buffer spring beam, cheek to be 6" wide by $8\frac{1}{2}$ " deep, and $4\frac{3}{4}$ " from headstock; also to be morticed for suspender beam, and to have two bolts in each timber, with heads checked in top, to prevent splitting, placed as in drawing, viz.:—Two $\frac{3}{8}$ " bolts in timber behind hook, $1\frac{3}{4}$ " from outer face, one $\frac{3}{8}$ " bolt and one $\frac{3}{4}$ " bolt in timber in front of hook, in centre of timber, this $\frac{3}{4}$ " bolt also secures end of stop brace. Each timber to be secured to centrals by one $\frac{3}{8}$ " bolt at end, and by four $\frac{3}{4}$ " bolts, with double nuts, which also secure guides for draw spring, also by one $\frac{3}{4}$ " bolt to headstock, all with heads on top.

Platform head to be 7" deep by 4'-3" long in centre, and then coved on under side to 6" deep, and taper up to $4\frac{1}{2}$ " deep at end; also to be 8" wide by 1'-11" long in centre of front, and taper back to 4" round ends. Heads to be secured by two $\frac{3}{4}$ " tie rods, 2'-6" centre to centre passing through headstock, and are then bent down to iron bolster and hooked round top plate with hook not less than 3" long; also to have bevel cast iron washer outside of platform head, to give square bearing face for nut.

Platform truss beam to be $7\frac{1}{2}$ " over shoulders, and tenoned into draw bar timbers, flush with top, with single tenon 2" long, full width of timber, as follows:—Commencing at top with 2" shoulder, 2" tenon, 2" space, and remainder to project below to full length, fitting against 5" shoulder on draw bar timbers and secured by one $\frac{1}{2}$ " bolt passing through draw bar timbers, truss beam and stirrup block; also by two $\frac{3}{4}$ " tie rods, 1'-5 $\frac{1}{4}$ " centre to centre, which pass through truss beam inclined upwards to $5\frac{1}{2}$ " from bottom of headstock, through headstock horizontally, and are then bent down to iron bolster and hooked round top plate with hook not less than 3" long. Face of truss beam to be chamfered to give square bearing face for nuts, and provided with wrought iron washer $2\frac{1}{2}$ " \times $2\frac{1}{4}$ " \times $\frac{1}{4}$ " thick under nut.

Buffer spring beam to be let into cheek in draw bar timbers flush with top, and secured to same by two $\frac{1}{2}$ " bolts, one through the buffer spring beam and one below it.

Suspender beam to be $7\frac{1}{2}$ " over shoulders, placed against under side and flush with face of headstock between draw timbers, and tenoned into these timbers with single tenon 1" long, full width of block, as follows:—Commencing at top with 2" shoulder, 2" tenon, and 1" shoulder.

Stirrup block to be placed as shown in drawing, and secured to draw bar timber by three $\frac{1}{2}$ " bolts, also by $\frac{1}{2}$ " bolt which secures truss beam.

Platform floor to be of first quality clear yellow pine 1" thick, tongued and grooved, not over 3" wide, to be screwed down with No. 18 brass screws 2" long, one in each end of each piece.

HAND RAILS.

	MATERIAL.	No.	SIZE.
Platform hand rails.....	Wrought Iron.....	4	See drawing.
Pillars for same.....	" ".....	8	" "
Ferrules for pillars.....	Cast Iron.....	12	" "
Hand rail chains.....	Wrought Iron.....	2	" "
Hand rails on car.....	" ".....	4	" "
Screws for same.....	" ".....	20	No. 22 \times 3" long.

Platform hand rails of wrought iron to be forged solid with end pillar, pillar to have shoulder at bottom, set in cast iron ferrule, which is placed on top of platform head in centre of round end, and to be secured by end 1" dia. tapering to $\frac{3}{4}$ " dia., passing through ferrule, timber, and hanger for footsteps, with $\frac{7}{8}$ " nut on end; rail to be supported by two wrought iron pillars on each side, with shoulder and nut on top, and with shoulder set in cast iron ferrules at bottom and secured by end 1" dia. tapering to $\frac{3}{4}$ " dia., with nut and washer same as end pillars. Chain, $\frac{1}{4}$ " dia., to be secured to right hand rail by $\frac{3}{8}$ " solid link, and to left hand rail by $\frac{3}{8}$ " hook. Provision to be made on left hand side for brake shaft, and on right hand side for ratchet and guard for uncoupling lever, as shown in drawing. Hand rail pillars to be turned. Hand rails on car to be $\frac{3}{4}$ " dia., as shown on drawing, and each secured by five No. 22 screws 3" long.

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SAFETY CHAINS.

Safety chain and hook to be provided for each end of car; to be 1'-3½" centre to centre, hook to be on left hand side, and secured under timber by two ¾" bolts, with heads checked in top, and to have end turned up ¾" behind timber; chain to consist of two ¾" links 5½" long inside, and eye plate secured to timber by two ¾" bolts, with heads checked in top, and to have end turned up ¾" behind timber, all to be as shown in drawing.

Platform heads to be checked out for clearance for hook and chain.

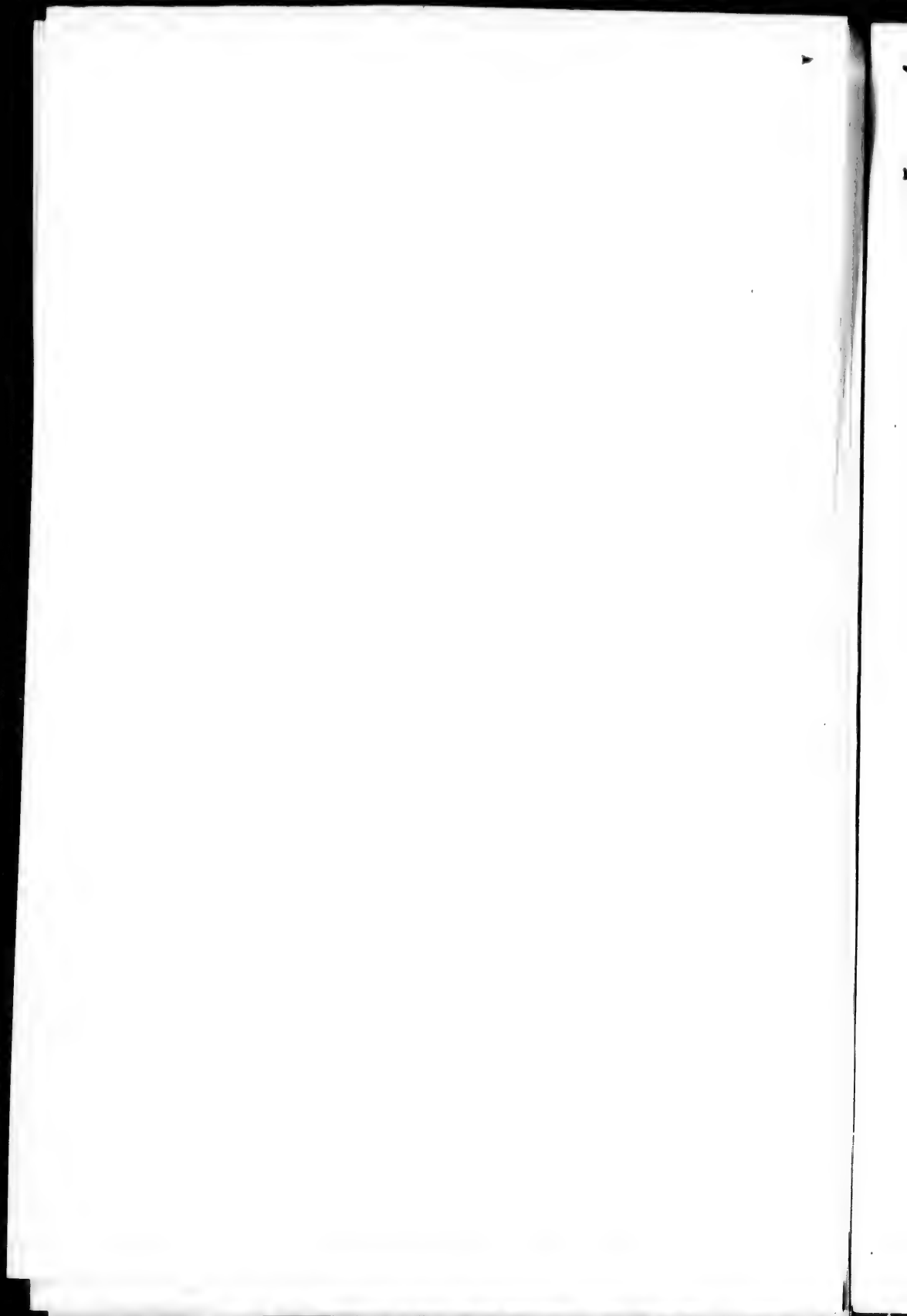
STEPS.

	MATERIAL.	No.	SIZE.
Outsides	White Ash.....	4	2 2½" deep, See drawing.
Coach screws for same to platform head.....	Wrought Iron.....	12	½" dia x 3" long.
Insides, under headstock	White Ash.....	4	1 6½" deep, See drawing.
Blocks for same.....	" ".....	4	2½" x 2" x 1 1½"
Coach screws for blocks to headstocks.....	Wrought Iron.....	12	½" dia x 4" long.
" " " steps to blocks.....	" ".....	12	½" dia x 3" "
Bottom treads.....	White Ash.....	4	1 1½" x 3 0½" x 1½"
Top	" ".....	4	1 1½" x 2 5¼" x 1"
Risers	" ".....	4	1 0½" x 2 5¼" x ½"
Plates for bottom treads.....	Cast Iron.....	4	See drawing.
" " top	" ".....	4	" "
Screws for plates.....	Wrought Iron.....	112	No. 10 x 1" long.
Step hangers (outside).....	" ".....	4	See drawing.
" " (inside).....	" ".....	4	" "
Coach screws for same to headstock	" ".....	4	½" dia x 3" long.
Bolts for hangers to steps.....	" ".....	4	½" dia x 2 8½" long.
" " ".....	" ".....	8	½" dia x 2½" long.

Sides of steps to be as shown in drawing, with rebate ¾" deep for treads and riser which are to be placed as shown, and all secured to step hangers by one ¾" through bolt under bottom tread, and by two ¾" bolts, one to each hanger. Outside step hanger to be secured by end of hand rail pillar below platform head, as specified; inside step hanger to be secured under headstock by one ¾" coach screw 3" long. Outside timber of steps to be secured to inside of platform head by three ½" coach screws 3" long; inside timber to be secured to block under headstock by three ½" coach screws 3" long, block secured to headstock by three ½" coach screws 4" long. Treads to be protected by cast iron plates, as shown in drawing, each secured by fourteen No. 10 screws 1" long.

MILLER COUPLER AND BUFFER.

	MATERIAL.	No.	SIZE.
Buffers.....	Wrought Iron.....	2	See drawing.
Washers, with ½" split pins.....	" ".....	2	" "
Thimbles	Cast ".....	2	" "
Buffer plates.....	Wrought ".....	2	1' 1" x 7" x ½"
Screws for same.....	" ".....	26	No. 16 x 1½" long.
Buffer springs, one coil, Scott's rolled edge pattern.....	Steel.....	2	6" dia x 7" "



**MILLER
COUPLER
AND BUTTER.**

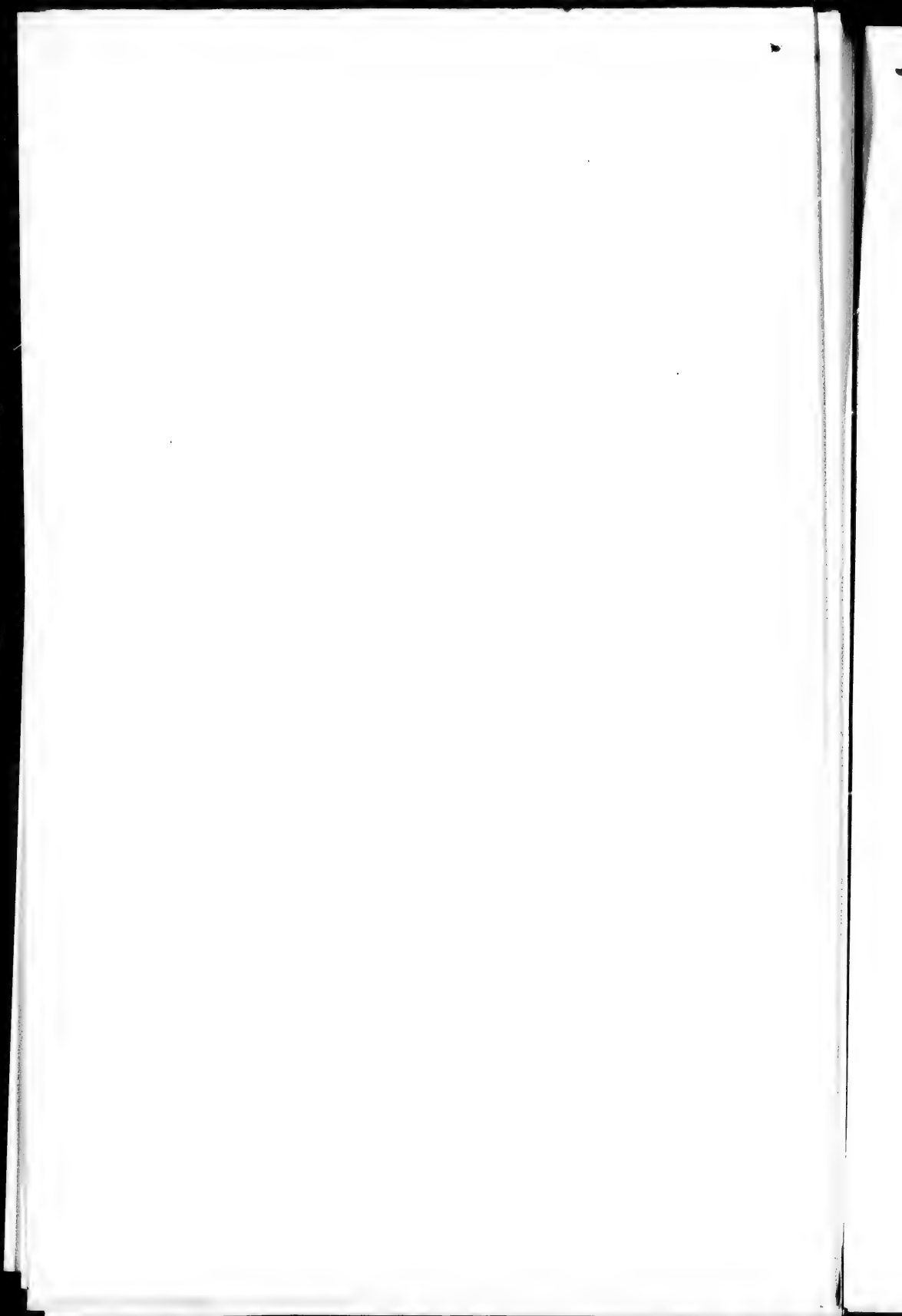
	MATERIAL.	No.	SIZE
Followers (front).....	Wrought Iron.....	3	See drawing.
Followers (back).....	Cast Iron.....	2	" "
Inscription plates.....	Cast Iron.....	2	" "
8 rows for same.....	Wrought Iron.....	8	No. 18 x $1\frac{1}{2}$ " long.
Draw-hooks.....	Cast Steel.....	2	See drawing.
Tail strips.....	Wrought Iron.....	2	" "
Bolts for same, with double nuts and split pins.....	" ".....	4	$1\frac{1}{2}$ " dia x $7\frac{1}{2}$ " long.
Draw springs, one coil, Scott's rolled edge pattern.....	Steel.....	2	6" dia x 7" "
Followers for same (back).....	Wrought Iron.....	2	See drawing.
" " (front).....	Cast Iron.....	2	" "
Bolts through centre (countersunk heads).....	Wrought Iron.....	2	1" dia x 1" long.
Draw spring guides.....	" ".....	4	See drawing.
Stirrups, under platform truss beam.....	" ".....	2	" "
Bolts for same with double nuts.....	" ".....	8	$\frac{3}{4}$ " dia x $1\frac{1}{2}$ " long.
Chafing plates under platform truss beam.....	" ".....	2	$10\frac{1}{2}$ " x 2" x 5-10"
Stirrups in front of headstock.....	" ".....	2	See drawing.
Coach screws for same.....	" ".....	8	$\frac{1}{2}$ " dia x $1\frac{1}{2}$ " long.
Uncoupling chains, with eyebolt, clevis and pin.....	" ".....	2	$\frac{1}{2}$ " dia See drawing.
" levers.....	" ".....	2	See drawing.
Centre bolts for same.....	" ".....	2	$\frac{1}{2}$ " dia x 4" long.
" plates " ".....	Cast ".....	2	See drawing.
Coach screws for plates.....	Wrought ".....	8	$\frac{1}{2}$ " dia x $2\frac{1}{2}$ " long.
Plates for slot in headstock.....	Cast ".....	2	See drawing.
Screws for same.....	Wrought ".....	12	No. 18 x $1\frac{1}{2}$ " long.
Cushion for lever.....	Rubber.....	2	1" x 1" x $1\frac{1}{2}$ "
Wedges " " with $\frac{3}{16}$ " chain and eyebolt.....	Cast Iron.....	2	See drawing.
Ratchets for lever.....	Wrought Iron.....	2	" "
Bolts for ratchets (countersunk heads).....	" ".....	6	$\frac{1}{2}$ " dia x $1\frac{1}{2}$ " long.
Guards for lever.....	" ".....	2	See drawing.
Stops for draw-hook.....	Cast Iron.....	2	" "
Bolts for same.....	Wrought Iron.....	2	1" dia x $1\frac{1}{2}$ " long.
Stop braces.....	" ".....	2	See drawing.
Brake shift braces.....	" ".....	2	" "
Bolts for same.....	" ".....	2	$\frac{3}{4}$ " dia x $6\frac{1}{2}$ " long.
Coupling pins, with $\frac{1}{2}$ " chain and eye plate.....	" ".....	2	See drawing.
Bolts for eye plate.....	" ".....	2	$\frac{3}{4}$ " dia x $6\frac{1}{2}$ " long.
Plate to protect hole for pin.....	Cast ".....	2	See drawing.
Screws for same.....	Wrought ".....	8	No. 18 x $1\frac{1}{2}$ " long.
Chafing plate for chain.....	Cast ".....	2	See drawing.
Screws for same.....	Wrought ".....	6	No. 18 x $1\frac{1}{2}$ " long.
Coupling spring, two plates.....	Steel.....	2	See drawing.
Brackets for same.....	Wrought Iron.....	2	" "
Bolts for spring, screwed 5" with double nuts.....	" ".....	2	$\frac{3}{4}$ " dia x 7" long.
Bolts for brackets to centrals.....	" ".....	4	$\frac{1}{2}$ " dia x $5\frac{1}{2}$ " long.

Coupling pins with solid collar and eye to be provided, to be secured by $\frac{1}{2}$ " chain with $\frac{5}{8}$ " end links and wrought iron eye plate to under side of platform head, plate to be secured by one $\frac{5}{8}$ " bolt, with head checked in top. Hole to be provided in platform head for coupling pin, to be protected by cast iron plate on top, secured by four No. 18 screws $1\frac{1}{2}$ " long, and to have cast iron chafing plate in front secured by three No. 18 screws $1\frac{1}{2}$ " long.

	MATERIAL.	No.	SIZE.
Distance of wheel centres apart.			8 0"
Wheels, steel tyred, Mansell clip.	Krupp's Wrought Iron disc.	8	40" dia
Axles.	Wrought Iron.	4	M. C. B. S.
Axle boxes.	Cast Iron.	8	See drawing.
Brasses (lead lined) 10 lbs. each.		8	M. C. B. S.
Wedges.	Cast Iron.	8	M. C. B. S.
Covers.	" "	8	See drawing.
Bolts for same.	Wrought Iron.	8	3" dia x 4" long.
Springs for same.	Steel.	8	1" dia, 18" hole, 2" long

TRUCKS.

	MATERIAL.	No.	SIZE.
Axle box pedestal	Cast Iron.....	8	See drawing.
Bolts for same (horizontal).....	Wrought Iron.....	24	$\frac{3}{4}$ " dia x $6\frac{1}{2}$ " long.
" " " (vertical).....	" ".....	16	$\frac{3}{4}$ " dia x $9\frac{1}{2}$ " "
Washers for same (plain).....	Cast Iron.....	16	$\frac{3}{4}$ " diameter.
Side frames, outside to outside.....			6' 7"
" ".....	White Oak.....	4	7" x $3\frac{3}{4}$ " x 12' $6\frac{1}{4}$ "
" plates.....	Wrought Iron.....	8	7" x $\frac{3}{8}$ " x 12' $6\frac{1}{4}$ "
Rivets for same.....	" ".....	152	$\frac{1}{2}$ " dia x $5\frac{1}{2}$ " long.
End frames (straight).....	White Oak.....	2	7" x $4\frac{1}{2}$ " x 6' 11"
" " (hollow).....	" ".....	2	11" x $4\frac{1}{2}$ " x 6' 11"
Plates for same (before bending).....	Wrought Iron.....	2	$4\frac{1}{2}$ " x $\frac{5}{8}$ " x 4' $5\frac{1}{2}$ "
Bolts for same (heads checked in).....	" ".....	4	$\frac{5}{8}$ " dia x $5\frac{1}{4}$ " long.
" " " " ".....	" ".....	4	$\frac{5}{8}$ " dia x 5" "
" " " " ".....	" ".....	2	$\frac{5}{8}$ " dia x $4\frac{3}{4}$ " "
" " " at ends.....	" ".....	4	$\frac{5}{8}$ " dia x $8\frac{3}{4}$ " "
Washers for these bolts (plain).....	Cast Iron.....	4	$\frac{5}{8}$ " dia
Bolts for side to end frames, double nuts (vertical).....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 11 $\frac{1}{2}$ " long.
Washers for these bolts (plain).....	Cast Iron.....	8	$\frac{3}{4}$ " dia
Joint bolts, side to end frames (horizontal).....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 10 $\frac{1}{2}$ " long.
Washers for these bolts (plain).....	Cast Iron.....	8	$\frac{3}{4}$ " dia
Transoms or cross frames.....	White Oak.....	4	8" x 5" x 6' 11"
Bolts for same to side frames.....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 10 $\frac{1}{2}$ " long.
Truss rods for same (with nut at each end).....	" ".....	4	$\frac{1}{2}$ " dia x 6' 10 $\frac{1}{2}$ " long.
" " " " ".....	" ".....	4	$\frac{1}{2}$ " sq x 6' 10 $\frac{1}{2}$ " "
Washers for truss rods.....	Cast Iron.....	16	$\frac{5}{8}$ " dia See drawing.
Brackets for same.....	" ".....	4	See drawing.
Bolts for these brackets (heads checked in).....	Wrought Iron.....	4	$\frac{5}{8}$ " dia x $6\frac{1}{2}$ " long.
" " " " ".....	" ".....	4	$\frac{5}{8}$ " dia x $5\frac{3}{4}$ " "
Bolts for transoms to side frames.....	" ".....	8	$\frac{3}{4}$ " dia x 9" "
Washers for these bolts (plain).....	Cast ".....	8	$\frac{3}{4}$ " diameter.
Swing link bearing plates.....	Wrought ".....	8	See drawing.
Bolts for same to transoms.....	" ".....	24	$\frac{1}{2}$ " dia x $9\frac{1}{4}$ " long.
Friction plates on transoms.....	Cast ".....	16	See drawing.
Bolts for same (countersunk heads).....	Wrought ".....	32	$\frac{1}{2}$ " dia x 6" long.
Intermediate timbers, distance apart.....			3' 4"
" ".....	White Oak.....	8	8" x 3" x 5' $5\frac{1}{2}$ "
Bolts for same.....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 11 $\frac{3}{4}$ " long.
Washers for these bolts (plain).....	Cast ".....	16	$\frac{3}{4}$ " diameter.
Bolts for same to transoms.....	Wrought ".....	8	$\frac{5}{8}$ " dia x 11 $\frac{1}{2}$ " long.
Washers for these bolts (plain).....	Cast ".....	8	$\frac{5}{8}$ " diameter.
Tie bolts (longitudinal) (heads checked in).....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 5' $6\frac{1}{2}$ " long.
Swing brackets.....	White Oak.....	2	1' $4\frac{1}{4}$ " x 7" x 5' 8"
Bolts for same (heads and nuts checked in).....	Wrought Iron.....	8	$\frac{5}{8}$ " dia x 1' $3\frac{1}{2}$ " long.
Truck crown plates.....	Cast ".....	2	See drawing.

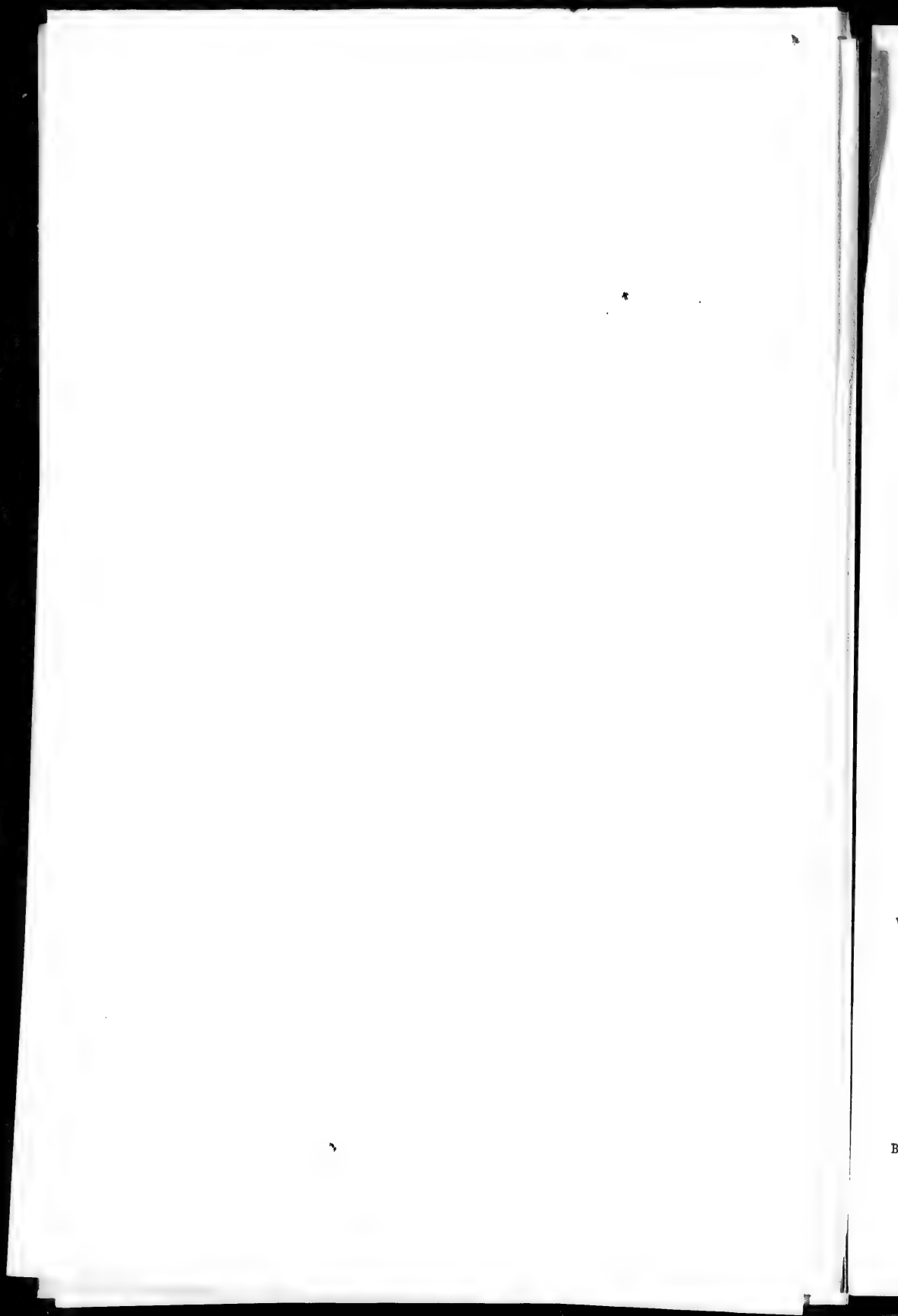


TRUCKS.

	MATERIAL.	No.	SIZE.
Bolts for same.....	Wrought "	8	$\frac{3}{4}$ " dia x 9" long.
Friction plates on bolster.....	Cast "	16	See drawing.
Coach screws for same.....	Wrought "	16	$\frac{1}{2}$ " dia x 3" long.
Screws for same.....	" "	48	No. 18 x 2" "
Friction rollers.....	Cast "	4	See drawing.
Chairs for same.....	" "	4	" "
Bolts for chairs (heads checked in on under side).....	Wrought "	8	$\frac{3}{4}$ " dia x $7\frac{1}{4}$ " long.
Spring planks.....	White Oak ..	2	1' 0 $\frac{3}{4}$ " x 3 $\frac{1}{2}$ " x 5' 8"
Bolts for same.....	Wrought Iron.....	6	$\frac{3}{4}$ " dia x 1' 7 $\frac{1}{4}$ " long.
Swing links (top).....	" "	8	1' 0 $\frac{1}{4}$ " Crs See drawing
" " (intermediate).....	" "	16	4 $\frac{1}{2}$ " Crs " "
" " (lower).....	" "	8	4 $\frac{1}{2}$ " Crs " "
" " pins (top).....	" "	8	1" dia x 4 $\frac{1}{4}$ " long.
" " " (intermediate) with $\frac{3}{8}$ " split pins.....	" "	16	1" dia x 3 $\frac{1}{4}$ " "
Swing link axles, with $\frac{3}{8}$ " split pins.....	Wrought Iron.....	4	(2 $\frac{1}{2}$ " square x 1' 0 $\frac{1}{4}$ " over shoulder, 2' 2" long, ends 2" diam.
Swing links, Cr. to Cr. on transom.....			4' 8 $\frac{1}{2}$ "
" " " " on spring plank.....			4' 11"
Bearing springs.....	Steel.....	16	(3' 0" centres, 1' 1 $\frac{1}{2}$ " over buckles, 5 leaves each 3" wide x $\frac{3}{4}$ " thick.
Spring seats.....	Cast Iron.....	8	See drawing.
Distance washers (between springs).....	" "	24	" "
Bolts for spring ends.....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 1' 3 $\frac{1}{4}$ " long.
Equalizing beams.....	" "	4	See drawing.
" " springs, one coil, Scott's rolled edge pattern.....	Steel.....	8	8" dia x 8 $\frac{1}{4}$ " long.
" " " " " (upper).....	Cast Iron.....	8	See drawing.
" " " " " (lower).....	" "	8	" "
Bolts for upper seats.....	Wrought Iron.....	8	$\frac{3}{4}$ " dia x 9 $\frac{1}{4}$ " long.
Washers for same (plain).....	Cast "	8	$\frac{3}{4}$ " diameter.
Pins for lower seats, screwed in beam.....	Wrought "	8	$\frac{1}{8}$ " dia x 1 $\frac{1}{4}$ " long.
Pedestal stays.....	" "	4	2 $\frac{1}{2}$ " x $\frac{5}{8}$ " x 13' 5 $\frac{1}{4}$ "
Bolts for same, double nuts and T head.....	" "	16	$\frac{3}{4}$ " dia x 2 $\frac{3}{4}$ " long.
Cross braces for same.....	" "	4	$\frac{3}{4}$ " dia See drawing.
Bolts for braces, double nuts, countersunk heads.....	" "	8	$\frac{3}{4}$ " dia x 2 $\frac{3}{8}$ " long.
Check chains, (with hook and end link).....	" "	8	$\frac{3}{4}$ " dia See drawing.
Eye brackets, for same to trucks.....	" "	8	See drawing.
Bolts for same.....	" "	16	$\frac{3}{4}$ " dia x 6 $\frac{1}{4}$ " long.

Trucks are to be of the four-wheeled latéral motion type, with swing bolster, having the Master Car Builders' Standard (M.C.B.S.) axle bearing and bearing.

Side frames to be built up of white oak flitch 4' x 3 $\frac{1}{4}$ " and two wrought iron side plates 7' x $\frac{3}{8}$ " riveted together with thirty-eight $\frac{3}{8}$ " rivets to each frame, placed as shown in drawing; they are to be 11'-9 $\frac{1}{2}$ " over shoulders and to be lipped $\frac{1}{4}$ " on top of end frames and tenoned in with double tenons 1 $\frac{1}{2}$ " long the full width of timber as follows:—Commencing at the top with 2" lip, 1" space, 1" tenon, 1 $\frac{1}{2}$ " space, 1" tenon and $\frac{1}{2}$ " shoulder, and to be secured by one joint bolt $\frac{3}{4}$ " diameter to each timber, and by one $\frac{3}{4}$ " bolt through lip and end frame to each timber, which also takes end of pedestal stay as shown in drawing.*



Back end of frame to be of white oak 7' X 4½" straight, and front end frame to be of white oak 11" X 4½", hollowed in centre to 1'-10" radius, 7" deep from top, to clear Miller coupler, and strengthened by wrought iron bent plate 4½" X ½" section on under side, secured by five ½" bolts with heads checked in top surface, and by two ½" bolts through ends as shown in drawing.

Transoms or cross frames to be of white oak 8" X 5" X 5'-10" over shoulders, to be lipped 6½" under side frames, and tenoned in with double tenons 1½" long the full width of timber as follows:—Commencing at bottom with 2¼" lip, 1" space, 1½" tenon, 1½" space, 1½" tenon and ½" shoulder; to have swing link bearing plates on top to clip side frame and to be secured to it by one ¾" bolt, which also passes through lip of transom, bearing plate to be secured to transom by three ½" bolts, and to be provided with holes for swing links and pins to secure swing link pins, as shown in drawing. Transoms to be strengthened by two bent wrought iron truss rods, one on outside ½" diam, with bracket in centre having two pins in face of transom, and secured to transom by two ½" bolts with heads checked in inner side of transom, and one ½" square rod on inside checked into transom as shown in drawing.

In course of rods from centre to side of truck they incline upwards from centre of under side of transom to 4" from top of side frame, through which they pass horizontally, and are provided with nuts and special cast iron washers as shown in drawing.

Each transom to be provided with four friction plates ½" thick, checked in transom ½" and secured by two ½" bolts to each plate with heads countersunk in plates and placed as shown in drawing.

Intermediate timbers to be of white oak 8" X 3" X 4'-9" over shoulders, to be lipped 4½" under end frames and tenoned in with double tenons 1½" long the full width of timber, as follows:—Commencing at bottom for hollow end timbers, with 1½" lip, 1½" space, 1½" tenon, 1½" space, 1½" tenon and ½" shoulder, and for straight end timbers with 2¼" lip, 1" space, 1½" tenon, 1½" space, 1½" tenon and ½" shoulder; and secured to end frames by one ¾" bolt to each timber, as shown in drawing. Intermediate timbers to be lipped 3½" under transoms and tenoned in with double tenons 1½" long the full width of timber, as follows:—Commencing at bottom with 2" lip, 1½" space, 1½" tenon, 1½" space, 1½" tenon and ½" shoulder, and secured to transom by one ¾" bolt to each timber, as shown in drawing. One longitudinal tie bolt ¾" diam, to be placed along inside face of intermediate timber, having the head checked in inner side of transoms, and passing through transom, end frame and release spring for brake beam, as shown in drawing.

Swing bolsters to be of white oak and provided with four ½" bolts from side to side to prevent splitting, one placed at each end, and one on each side of crown plate bolts, with heads and nuts checked in to clear transoms. Also to have eight cast iron friction plates to each bolster, ½" thick, checked into bolster ¼", and each secured to bolster by one ½" coach screw and three No. 18 wood screws. Bolsters and spring planks to be checked ¼" for spring seat castings, and spring plank to be checked ¼" for square on swing link axles.

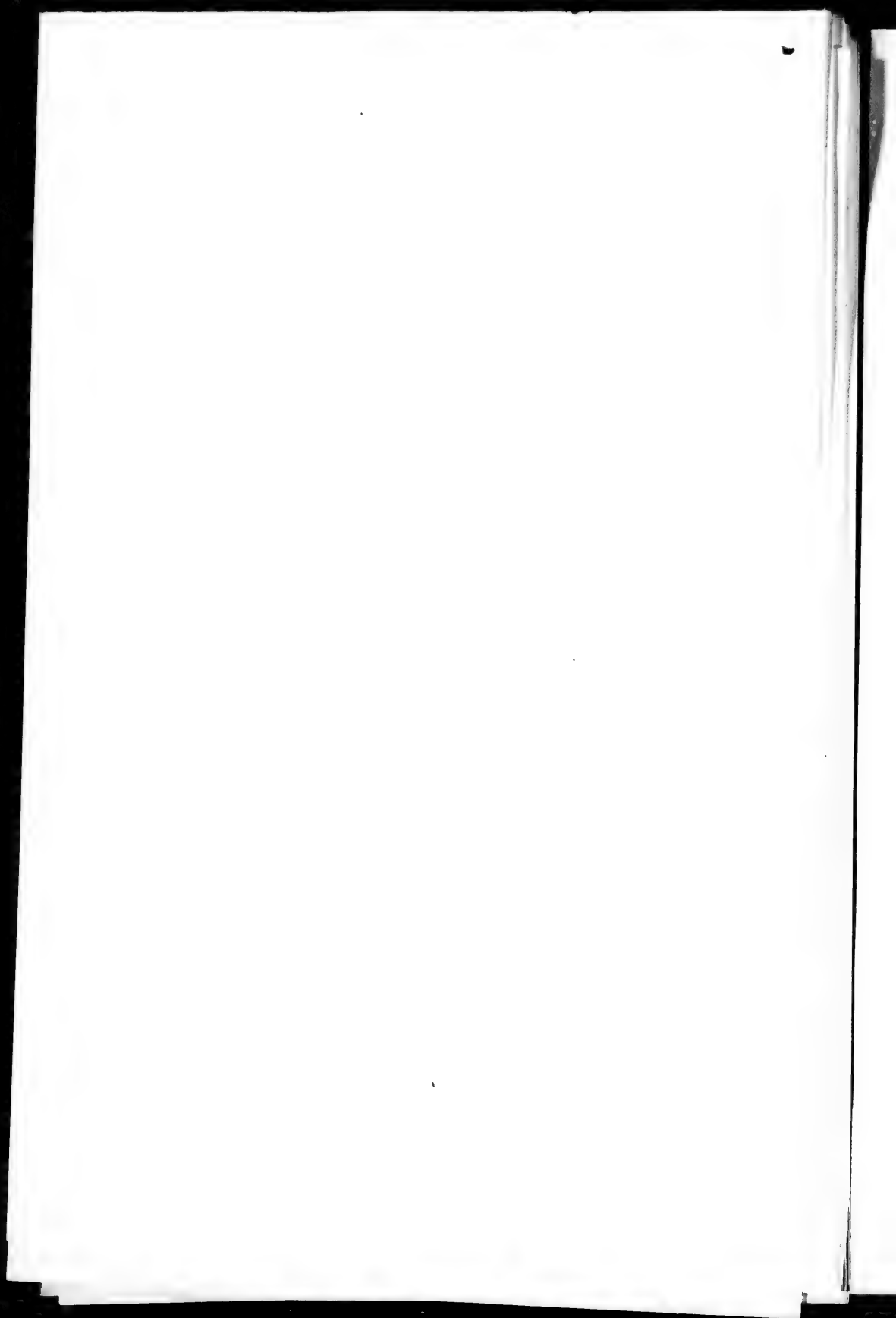
Each truck to have two wrought iron cross braces ¾" diam, on under side of pedestal stays, each end gibbed to receive stay and secured by one ½" bolt with head countersunk in stay and double nuts underneath.

WHEELS AND AXLES.

The wheels supplied with these cars are to comply with all the requirements of the separate drawings and standard wheel specification, under which all car wheels are now being supplied to this company; the date to be properly cut on each wheel and axle when the car is complete and ready to be turned out of the shop. The axles are to be the Master Car Builders standard, and to be sound, clear forgings of approved metal and manufacture, carefully turned, so that it will require a hydraulic pressure of not less than forty (40) tons or more than fifty (50) tons to force them into the wheels. Each pair of wheels must be of exactly the same circumference, and each must be at equal distance from the edge of its nearest journal, so as to give each wheel flange ⅜" clearance from the inner edge of rail head when it is running on the track.

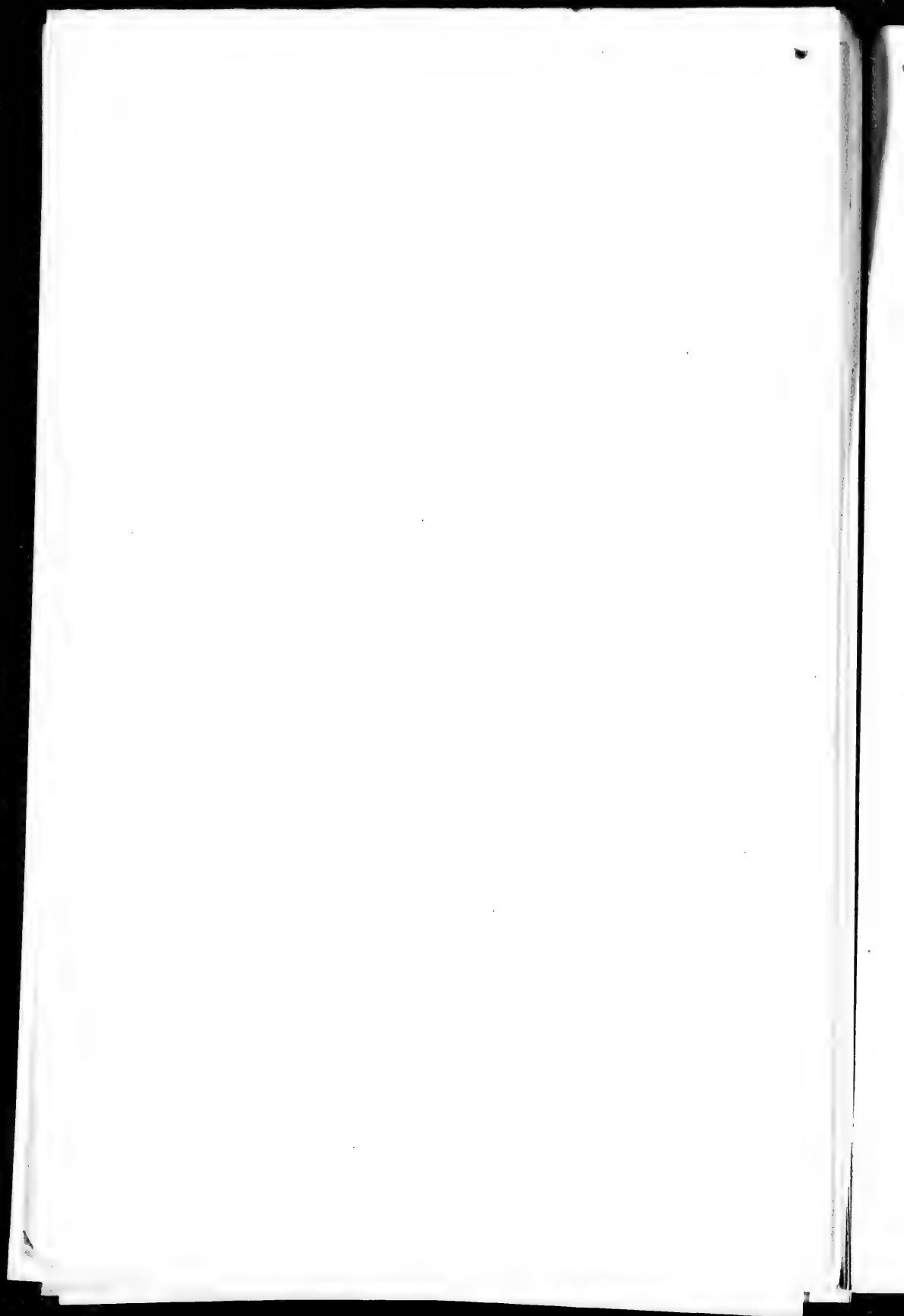
BRAKES.

Westinghouse air brake cylinder, auxiliary reservoir, triple valve, conductors valve, couplings, hose, &c., &c., complete, to be provided, and to be fixed as shown in drawing of C. & H. standard arrangement.

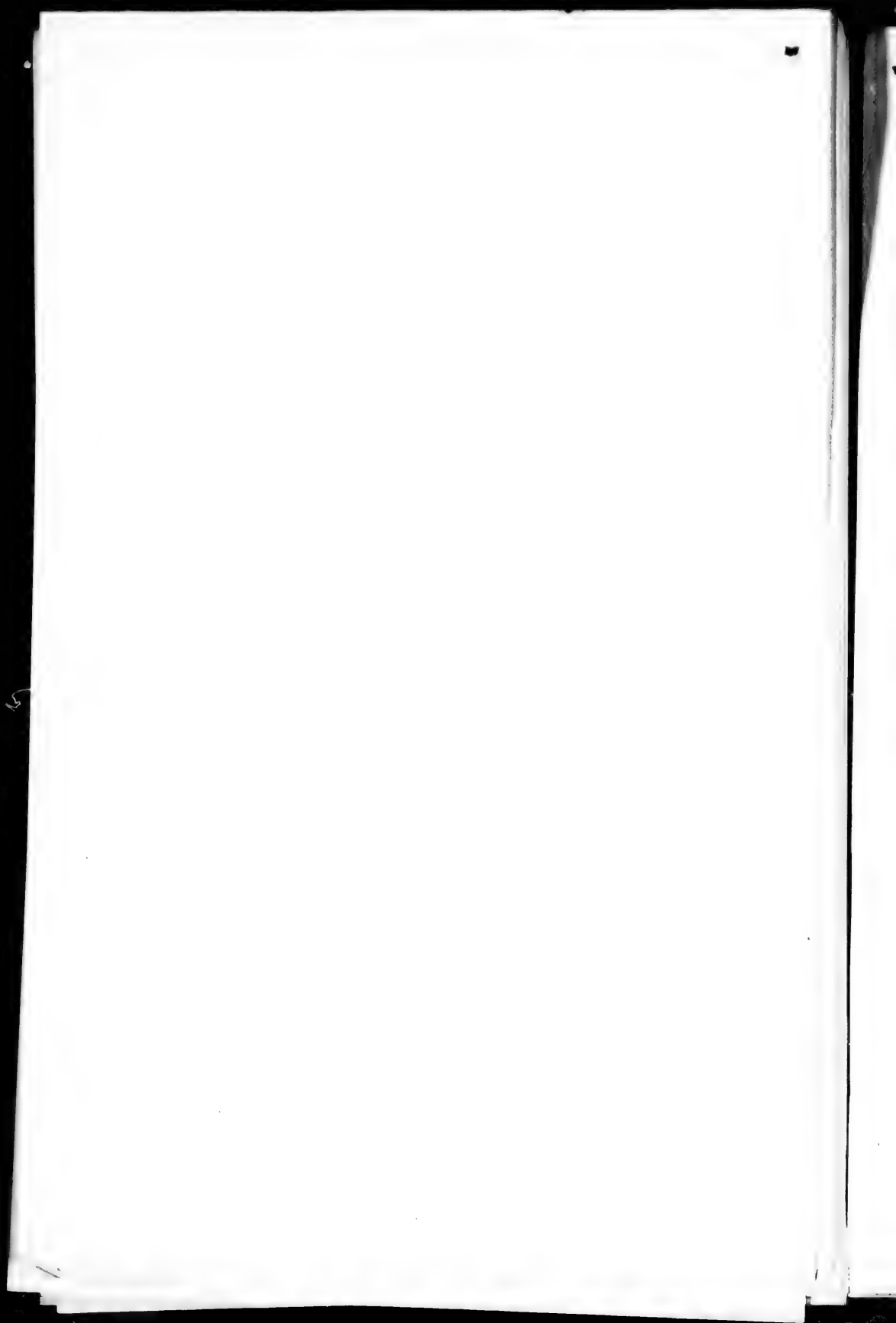


BRAKES.

	MATERIAL.	No.	SIZE.
Bolts for brake cylinder.....	Wrought Iron.....	6	$\frac{1}{2}$ " dia x $4\frac{1}{2}$ " long.
Cylinder plank.....	White Oak.....	1	1' 2" x 2" x 4' 6"
Coach screws for same.....	Wrought Iron.....	6	$\frac{1}{4}$ " dia x 6" long.
Planks for auxiliary reservoir.....	White Oak.....	2	6" x 2" x 4' 6" long.
Coach screws for same.....	Wrought Iron.....	8	$\frac{1}{4}$ " dia x 6" "
Bands for reservoir.....	" "	2	2" x $\frac{1}{16}$ " x 3' 6 $\frac{1}{4}$ "
Coach screws for bands.....	" "	8	$\frac{1}{4}$ " dia x $2\frac{1}{2}$ " long.
Clips for main pipes.....	" "	6	$1\frac{1}{2}$ " x $\frac{1}{4}$ " See drawing.
Coach screws for same.....	" "	6	$\frac{1}{4}$ " dia x $2\frac{1}{2}$ " long.
Clips for main pipes, under platform.....	" "	2	$1\frac{1}{2}$ " x $\frac{1}{4}$ " See drawing.
Bolts for same.....	" "	4	$\frac{1}{2}$ " dia x $1\frac{1}{2}$ " long.
Coach screws for same.....	" "	2	$\frac{1}{2}$ " dia x $2\frac{1}{2}$ " long.
Cylinder levers.....	" "	2	$3\frac{1}{2}$ " x $3\frac{1}{2}$ " 1' 5" and 1' 3" Crs
Slides for same.....	" "	2	$1\frac{1}{2}$ " x $\frac{1}{4}$ " See drawing.
Coach screws for same.....	" "	8	$\frac{1}{4}$ " dia x $2\frac{1}{2}$ " long.
Coupling rod.....	" "	1	$\frac{1}{2}$ " dia x 3' $4\frac{1}{2}$ " Crs.
Pins for same, with round split pins $\frac{1}{4}$ " dia.....	" "	2	$\frac{3}{4}$ " dia x 3" long.
Brake rods, main, with flat for hanger.....	" "	2	$\frac{3}{4}$ " dia x 8' $5\frac{1}{2}$ " Crs.
Hangers for same.....	" "	2	$\frac{3}{4}$ " dia See drawing.
Shoes for hanger.....	Cast Iron.....	4	See drawing.
Bolts for shoes, with double nuts.....	Wrought Iron.....	4	$\frac{1}{2}$ " dia x 3" long.
Slides for hanger.....	" "	2	$\frac{1}{2}$ " x $2\frac{1}{2}$ " x 1' 6" long.
Bolts for slides.....	" "	4	$\frac{1}{2}$ " dia x $2\frac{1}{2}$ " long.
Cross timbers for slides.....	White Oak.....	4	3" x $1\frac{1}{2}$ " x 1' 6" long.
Coach screws for same.....	Wrought Iron.....	8	$\frac{1}{2}$ " dia x $3\frac{1}{2}$ " long.
Pins for main brake rods, with round split pins $\frac{1}{2}$ " diam.....	" "	4	$\frac{3}{4}$ " dia x 3" "
Hand brake levers.....	" "	2	$3\frac{1}{2}$ " x $3\frac{1}{2}$ " 1' 8" & 1' 8" Crs
Secondary brake rod.....	" "	2	$\frac{1}{2}$ " dia x 13' $1\frac{1}{2}$ " Crs.
Pins for same, with round split pins $\frac{1}{4}$ " dia.....	" "	4	$\frac{3}{4}$ " dia x 3" long.
Brake levers.....	" "	2	$3\frac{1}{2}$ " x $\frac{3}{4}$ " 2' $3\frac{1}{2}$ " & 6 $\frac{1}{2}$ " Crs
Lower brake rods.....	" "	2	$\frac{1}{2}$ " dia x 10' 9" Crs.
Pins for same, with round split pins $\frac{1}{4}$ " dia.....	" "	4	$\frac{3}{4}$ " dia x 3" long.
Brake levers for adjusting.....	" "	2	$\frac{3}{4}$ " x $2\frac{1}{2}$ " 6 $\frac{1}{2}$ " Crs. and $\frac{1}{2}$ 3" to end.
Guides for adjustment.....	" "	2	2" x $\frac{1}{4}$ " See drawing.
Pins for guides.....	" "	2	$\frac{1}{4}$ " dia x 4" long.
Bolts for same.....	" "	4	$\frac{1}{2}$ " dia x 6" "
Washers for these bolts (plain).....	Cast Iron.....	3	$\frac{1}{2}$ " diameter.
Hand brake connecting rods.....	Wrought Iron.....	2	$\frac{1}{2}$ " dia x 15' 2" Crs
Pins for same, with round split pins $\frac{1}{4}$ " dia.....	" "	4	$\frac{3}{4}$ " dia x 3" long.
Angle iron stop.....	" "	2	3" x 3" See drawing.
Coach screws for same.....	" "	4	$\frac{1}{4}$ " dia x 3" long.
Brake chain and hook, end links $\frac{1}{4}$ " diameter.....	" "	2	$\frac{3}{4}$ " x 2' 6" See drawing
Eye bolts to brake shaft, with nut.....	" "	2	$\frac{1}{2}$ " diameter.



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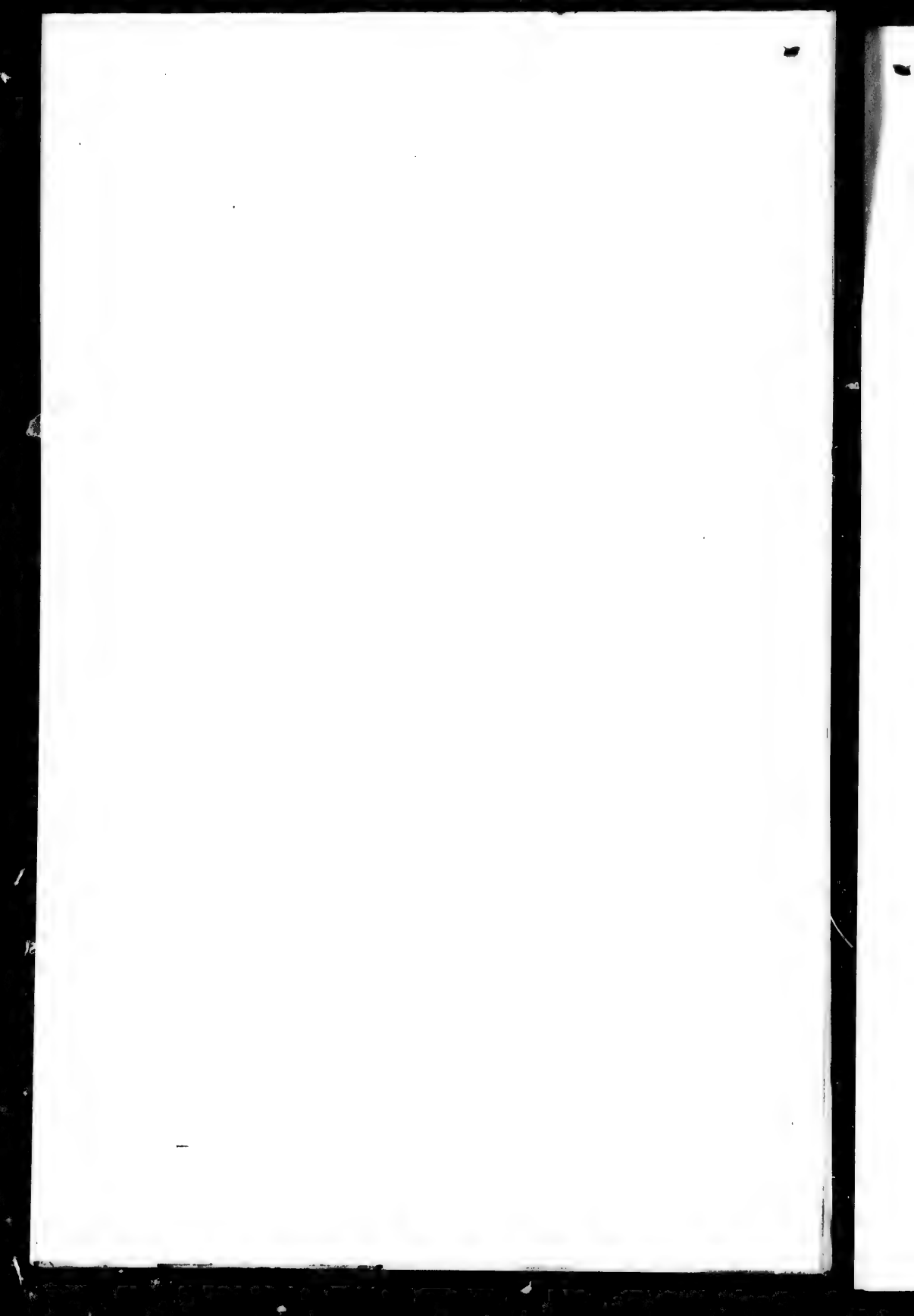


OUTSIDE SHEETING.

INSIDE FINISH.

WINDOWS.

DOORS.



BULKHEADS.

SALOONS.

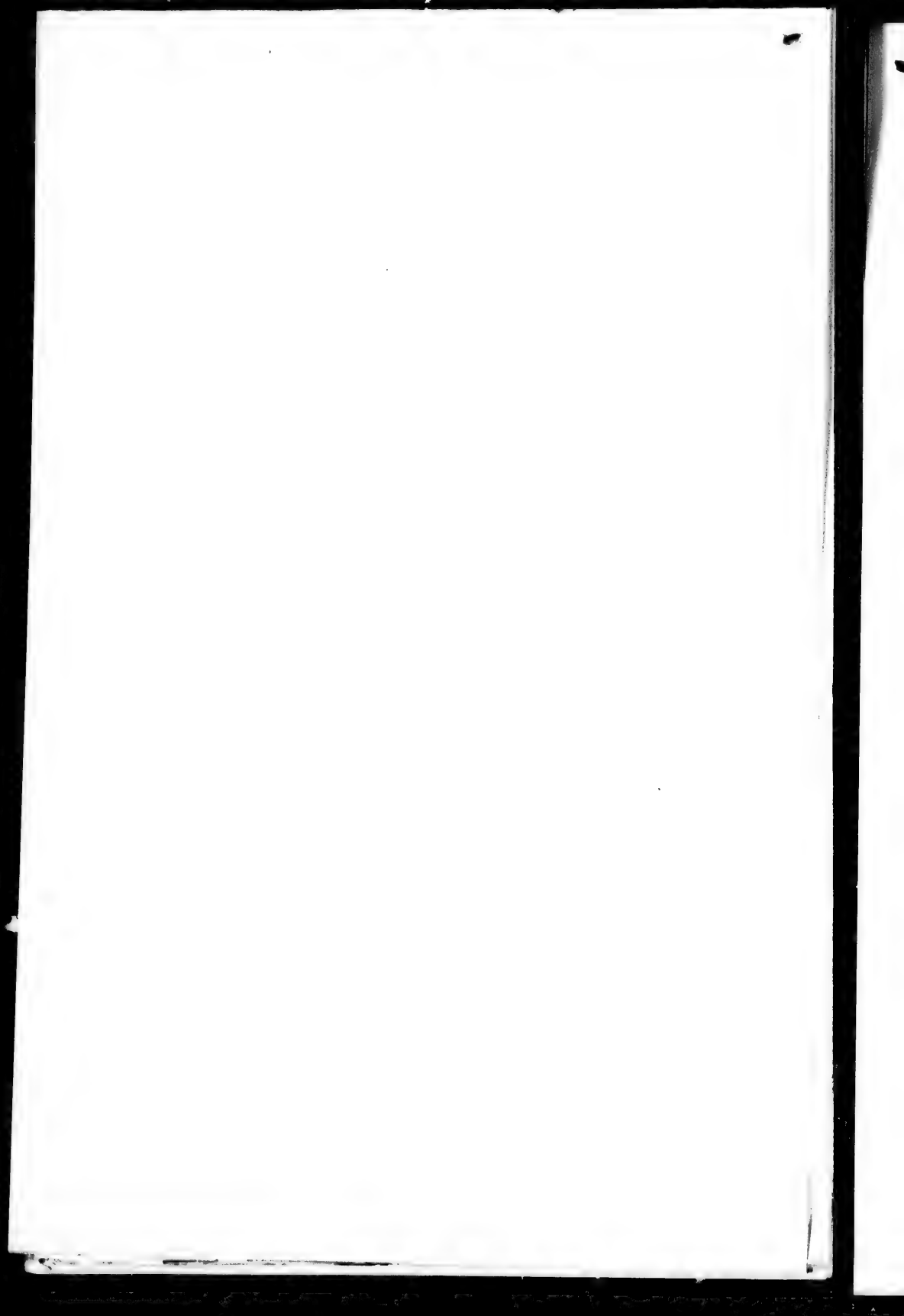
WASH ROOM.

HEATER ROOM.

HEATER.

SEATS.

LAMPS.



LOOKS.

FASTENINGS, CATCHES, &c.

PAINTING.

SPECIAL CONDITIONS.

Form of Tender for First-class Passenger Cars and Trucks.

_____ do hereby agree to supply the

CANADIAN PACIFIC RAILWAY COMPANY

with _____

_____ in accordance with the Specification and Drawings, &c., free of all claim for Patent-Right Royalties, &c., for the sum of _____ per Car, with its Trucks, &c., all complete.

(Signed.) _____

Witness. _____

To be delivered on C. P. R. Track at _____

free of all transit charges, on or before _____

Tenders to be addressed _____

_____ and endorsed "Tenders for First-class Passenger Cars and Trucks."